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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,326	02/06/2004	Takuji Nomura	81846.0035	8530

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EXAMINER

FICK, ANTHONY D

ART UNIT	PAPER NUMBER
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1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/774,326	NOMURA ET AL.	
	Examiner	Art Unit	
	Anthony Fick	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,5,7,13-17 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 and 17 is/are allowed.
- 6) ☒ Claim(s) 1,4,5 and 21-24 is/are rejected.
- 7) ☒ Claim(s) 13-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 18, 2006 has been entered.

Remarks

2. Applicant's amendments to the claims and drawings have overcome the previous objections and rejections under 35 U.S.C. 112. The objections and rejections are therefore withdrawn.

Claim Objections

3. Claim 13 is objected to because of the following informalities: the claim includes the limitation that the ridge-side of the tiles overlaps an eaves-side of said solar cell module. This limitation does not make sense according to typical roofing technique or applicant's figures. In applicant's figures the eaves-side of the solar cell module overlaps the ridge-side of the tiles, thus protecting the junction of the module and tile from water. If the module was placed on the roof as claim 13 now reads, the rainwater would collect along the ridge-side of the tile that is overlapping the eaves-side of the solar cell module. It is assumed that applicant meant the claim to read as the figure shows. If applicant did mean this method, appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 4, 5 and 21 through 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1 recites the limitation "having a trough section" in line 10. It is unclear how the anti-trough-side surface, which is defined by being opposite the side with a trough, has a trough section. Further, lines 11-15 do not make sense in light of applicant's figures. As the claim is written now, it appears that the trough-side surface and the anti-trough-side surface are configured to overlap a trough section of an adjacent tile or an adjacent solar cell module. The figures and specification only show the anti-trough-side surface projecting part overlapping the trough section of adjacent tiles, while the trough-side surface projecting part gets overlapped by adjacent tiles. It is suggested that applicant separate the projecting part on the trough-side surface from the limitation of "configured to overlap ..." in lines 14 and 15.

7. Claims 4, 5 and 21 through 24 all depend from claim 1 and are indefinite for the same reasoning.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 4, 5, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Dinwoodie (U.S. 5,505,788).

Dinwoodie discloses a thermally regulated photovoltaic roofing assembly as shown in figure 9.

Regarding claim 1, figure 9 shows the photovoltaic tiles, 902, are configured to be laid together with tiles, 904, on the roof of a building. Figures 1 through 8 all show different embodiments of the solar cell modules with the solar cells provided on the uppermost surface of the base member such that a lower surface of the solar cell is positioned above and is mounted to the uppermost surface of the base member. The figures also show the use of insulating support members provided on lower surfaces of the base members, rectangular base members (shaped as the solar cell modules) with downward projected surfaces to mount the module. Figure 2a specifically shows a trough section and a projecting part on the anti-trough-side to overlap a trough section of an adjacent module.

Regarding claims 4 and 5, the figures are cross sections, thus the parts extend from the ridge-side to the eaves-side. Also figure 2a shows a lower surface of the projecting part contacting an upper surface of a rising wall of an adjacent module.

Regarding claims 21 and 22, the figures show the base member is a bottomless box that opens at the lower surface and has a hollow interior region to receive an insulating support member.

Claim Rejections - 35 USC § 103

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10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 4, 5, 21, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11-200561, herein referred to as JP '561, in view of Ouchida et al (U.S. 6,525,264) and Dinwoodie (U.S. 5,505,788).

With respect to claims 1 and 4, JP '561 teaches a solar cell module comprising photovoltaic cell (2); and a rectangular frame that encompasses the instant base member and comprises a ridge-side surface at section (1D) which projects downward at part (13D); an eaves-side surface at section (1C); a trough-side surface at section (13A) and an anti-trough-side surface at section (13B) (see Figures 1, 2, and 3). The trough-side surface at section (13A) has a protecting part (12A, 14A, 15A), extending along the ridge-side to the eaves-side of the roof and configured to overlap the trough section of an adjacent solar cell module (see Figures 3 and 7). Likewise, the anti-trough-side surface at section (13B) has a protecting part (12B, 14B), extending along the ridge-side to the eaves-side of the roof and configured to overlap the trough section of an adjacent solar cell module (see Figures 3 and 7). Note that a solar cell module is a tile and thus, an adjacent solar cell module is also an adjacent tile. The photovoltaic cell (2) is mounted such that a lower surface of photovoltaic cell (2) is positioned above and is mounted to an upper surface of said rectangular frame (see Figure 2). For example reference sign (3B) in Figure 2 is an upper surface of the frame and the photovoltaic cell

(2) is mounted such that a lower surface of photovoltaic cell (2) is positioned above and is mounted to said upper surface at (3B).

With respect to claim 5, a lower surface of, for example, the projecting part (12B) of the anti-trough-side contacts an upper edge of a rising wall (11A) of section (13A) which defines the trough section of the adjacent tile or module to seal a gap (see Figure 11).

With respect to claim 21, JP '561's rectangular frame, which encompasses the instant base, is a box that is bottomless, as well as topless.

JP '561 teaches the limitations of the instant claims other than the difference which is discussed below.

JP '561 does not specifically teach the structure of its photovoltaic cell (2), and, as such, does not specifically teach the combination of a base member and support member recited in instant independent claim 1 or placement of the solar cell on an uppermost surface of the base member.

Ouchida et al teaches a photovoltaic cell comprising semiconductor layer (402), a sealing resin film (403), and a thermal insulation layer (404) (see Figure 12; and col. 18, lines 23-44). The sealing resin film along with frame (405) is a rectangular base member. The thermal insulation layer (404) corresponds to the instant insulating support member (see col. 18, lines 34-44). Ouchida et al's photovoltaic cell structure provides the advantage of suppressing photo-degradation and providing large output (see col. 4, lines 16-19). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used Ouchida et al's photovoltaic cell structure

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for the photovoltaic cell of JP '561 because Ouchida et al's photovoltaic cell structure provides the advantage of suppressing photo-degradation and providing large output (see co. 4, lines 16-19). As seen in Figure 12, Ouchida et al's frame, which is also a bottomless and topless box, is adapted to receive said insulation layer (104), as per instant claim 22.

Dinwoodie discloses a thermally regulated photovoltaic roofing assembly as shown in figure 9. Figure 9 shows the photovoltaic tiles, 902, are configured to be laid together with tiles, 904, on the roof of a building. Figures 1 through 8 all show different embodiments of the solar cell modules with the solar cells provided on the uppermost surface of the base member such that a lower surface of the solar cell is positioned above and is mounted to the uppermost surface of the base member. The figures also show the use of insulating support members provided on lower surfaces of the base members, rectangular base members (shaped as the solar cell modules) with downward projected surfaces to mount the module. It would have been further obvious to one having ordinary skill in the art at the time the invention was made to place the solar cell of JP '561 on the uppermost surface as in Dinwoodie because the specific placement of the solar cell is a design choice and the tiles of Dinwoodie show a known design within the art is to place the solar cells on the uppermost surface of a tile base. Further, the placement on the uppermost surfaces eliminates any material above the solar cell that could shadow the cell and reduce the power output.

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12. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '561 in view of Ouchida et al and Dinwoodie as applied to claims 1, 4, 5, 21, and 22 above, and further in view of Nakazima et al (EP 1071139 A2).

JP '561 in view of Ouchida et al and Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 23, the difference being that JP '561 in view of Ouchida et al and Dinwoodie does not specifically teach that the photovoltaic cell has a terminal box, and that the terminal box is inserted and mounted in an opening formed in the base member. However, the use of a base member that has an opening for inserting and mounting a terminal box for a photovoltaic cell is conventional in the art, as seen in Figure 1 of Nakazima et al, which has terminal box storage recess (3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the module structure of JP '561 in view of Ouchida et al and Dinwoodie so as to include an opening for inserting and mounting a terminal box for the photovoltaic cell because such is conventional in the art, as shown by Nakazima et al.

13. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP '561 in view of Ouchida et al and Dinwoodie as applied to claims 1, 4, 5, 21, and 22 above, and further in view of JP 2000-174313, herein referred to as JP '313.

JP '561 in view of Ouchida et al and Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 24, the difference being that JP '561 in view of Ouchida et al and Dinwoodie does not specifically teach that the insulating support member, i.e., said thermal insulation layer (404), prevents the base member, i.e., the frame, from being deformed when the frame receives the weight of a worker stepping

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on or laying the solar cell module. JP '313 teaches a solar cell module that enables a worker to stand on the module when the worker installs and fixes the module, wherein, as seen in Figures 8 and 9, the module has a supporter material (23) that permits large loading on the module (see also paragraph 0146). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the solar cell module of JP '561 in view of Ouchida et al and Dinwoodie with the support structure as taught by JP '313 because this would provide the solar cell module with support that permits large loading on the module, and that enables a worker to stand on the module when the worker installs and fixes the module, as taught by JP '313.

14. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dinwoodie as applied to claims 1, 4, 5, 21, and 22 above, and further in view of Nakazima et al (EP 1071139 A2).

Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 23, the difference being that Dinwoodie does not specifically teach that the photovoltaic cell has a terminal box, and that the terminal box is inserted and mounted in an opening formed in the base member. However, the use of a base member that has an opening for inserting and mounting a terminal box for a photovoltaic cell is conventional in the art, as seen in Figure 1 of Nakazima et al, which has terminal box storage recess (3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the module structure of Dinwoodie so as to include an opening for inserting and mounting a terminal box for the photovoltaic cell because such is conventional in the art, as shown by Nakazima et al.

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15. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dinwoodie as applied to claims 1, 4, 5, 21, and 22 above, and further in view of JP 2000-174313, herein referred to as JP '313.

Dinwoodie, as relied upon for the reasons recited above, teaches the limitations 24, the difference being that Dinwoodie does not specifically teach that the insulating support member, i.e., said thermal insulation layer (404), prevents the base member, i.e., the frame, from being deformed when the frame receives the weight of a worker stepping on or laying the solar cell module. JP '313 teaches a solar cell module that enables a worker to stand on the module when the worker installs and fixes the module, wherein, as seen in Figures 8 and 9, the module has a supporter material (23) that permits large loading on the module (see also paragraph 0146). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the solar cell module of Dinwoodie with the support structure as taught by JP '313 because this would provide the solar cell module with support that permits large loading on the module, and that enables a worker to stand on the module when the worker installs and fixes the module, as taught by JP '313.

Response to Arguments

16. Applicant's arguments with respect to claims 1, 4, 5 and 21 through 24 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

17. Claims 7 and 17 are allowed.

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18. Claims 13 through 16 would be allowable if rewritten or amended to overcome the objections, set forth in this Office action, dependent on whether applicant means for claim 13 to read as the examiner assumes it is meant to read (see item 3 above).

19. The following is a statement of reasons for the indication of allowable subject matter: claim 13 requires a method of laying solar cell modules together with tiles on a roof panel incorporating the use of specific fastening strips that engage the solar cell module and roof tiles in a specific manner. The closest prior art is JP 2000-226908, herein referred to as JP '908.

JP '908 teaches solar cell module tiles (1) that have already been laid on a roof (see Figure 6). Then, additional solar cell module tiles (1) are laid on the roof such that the eaves side of a solar cell module tile (1) to be laid is fastened to an upper portion of the ridge side of solar cell module tiles (1) that have already been laid (see Figures 6 and 8). As seen in Figure 1, the solar cell module (4) of a given solar cell module tile (1) is fastened to the eaves side of the solar cell module tiles (1) with fastening strips (8) (see also Figures 4 and 8). Alternatively, fastening strip (38) can be used, as seen in Figures 12 and 13. As seen in Figure 12, fastening strips (38) comprise a rectangular main part and the instant at least two rising parts that extend from the main part. The fastening strips (8) can also have a rectangular part and multiple rising parts as seen in the embodiment of Figure 17(a). Fastening strips (8, 38) prevent solar cell modules (4) from being blow off (see paragraph 0045).

However as figure 8 shows, the eaves-side of the modules simply rest on the ridge side of the adjacent tile. There is no engagement of the fastening strips to the

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adjacent tile, and no engagement of the fastening strips to the roof and the upper portion of the ridge-side of the tiles. Last the figure shows the fastening strips are attached to an upper portion of the eaves-side of the module and not between a lower portion of the eaves-side and the upper portion of the ridge-side of the adjacent tile.

Therefore the method of JP '908 does not meet all the requirements of the claims.

20. The following is an examiner's statement of reasons for allowance: claim 7 is directed to a method of laying solar cell modules that includes placement of a specific separate waterproof member between the solar cell module and the roofing tiles. The closest prior art is JP 11-200561, herein referred to as JP '561.

JP '561 teaches the laying of solar cell modules together with tiles (B) on the roof of a building (see Figure 11). As seen in Figure 1, 4, and 11, there is a separate waterproof member (7) placed between each solar cell module and one tile (B) which are laid adjacent in the direction of a gradient of the roof. As seen schematically in Figure 11, said waterproof member (7) has substantially the same height as the height of the tiles (B). As seen in JP '561's Figures 1, 4, and 11, the waterproof member (7) has a width narrower the tiles (B). The waterproof member (7) is a "rectangular box that opens at a lower portion thereof" to the extent that (7b) is one wall, (7D) is another wall, and (7E) is another wall, and (C) is in the opening of the box. The word "lower" is relative, and thus, when JP '561's Figures 4 and 11 are viewed upside down, the opening of waterproof member (7) is at a lower portion thereof. As seen in Figure 11, the waterproof member (7) has a trough section. This trough section renders waterproof a junction between the tile (B) to the right of the trough section and the solar

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module (A) adjacent thereto because waterproof member (7) is waterproof. As seen in Figure 11, the waterproof member (7) overlaps one side of a solar cell module and tile.

Claim 7 as amended now further requires the rectangular box opens at a lower portion with respect to the roof. Thus the word lower is no longer relative and requires the box to open facing the roof. Figure 11 of JP '561 shows the waterproof member to be open toward the sky or away from the roof. This configuration is not a rectangular box that opens at a lower portion thereof with respect to the roof. Further, altering the method of JP '561 by turning the waterproof member over so that it would open to the roof would destroy the invention of JP '561 and also not allow the member to fulfill its purpose as a waterproof member. Therefore the claim is allowable over the prior art.

Claim 17 is directed to an apparatus to prevent a solar cell module from being blown off by use of specific fastening strips. The claim requires the fastening strips to have a securing part directly secured to the roof through the ridge side end of one tile, and an engaging part coupled to an eaves-side edge of the solar module. The closest prior art is JP 2000-226908, herein referred to as JP '908.

JP '908 teaches solar cell module tiles (1) that have already been laid on a roof (see Figure 6). Then, additional solar cell module tiles (1) are laid on the roof such that the eaves side of a solar cell module tile (1) to be laid is fastened to an upper portion of the ridge side of solar cell module tiles (1) that have already been laid (see Figures 6 and 8). As seen in Figure 1, the solar cell module (4) of a given solar cell module tile (1) is fastened to the eaves side of the solar cell module tiles (1) with fastening strips (8) (see also Figures 4 and 8). Alternatively, fastening strip (38) can be used, as seen in

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Figures 12 and 13. As seen in Figure 12, fastening strips (38) comprise a rectangular main part and the instant at least two rising parts that extend from the main part. The fastening strips (8) can also have a rectangular part and multiple rising parts as seen in the embodiment of Figure 17(a). Fastening strips (8, 38) prevent solar cell modules (4) from being blow off (see paragraph 0045).

However as figure 8 shows, the eaves-side of the modules simply rest on the ridge side of the adjacent tile. There is no engagement of the fastening strips to the adjacent tile, and no engagement of the fastening strips to the roof and the upper portion of the ridge-side of the tiles. The fastening strips do not have a securing part directly secured to the roof through a ridge side end of one tile. Instead the strips are secured to the base, 5, which are secured to the roof via nails, 12b, at the ridge side of the module. As there is no direct securing, the fastening strips of JP '908 do not meet all the requirements of the claim. Therefore the claim is allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony Fick whose telephone number is (571) 272-6393. The examiner can normally be reached on Monday thru Friday 7 AM to 4 PM.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Fick
AU 1753
March 2, 2007

ADF


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